



**FEDERAL AVIATION
ADMINISTRATION**

Annual Report (2015)

**FAA Modernization and Reform Act of 2012 (P.L. 112-95) –
Section 308, Inspection of Repair Stations Located Outside the
United States**

FAA ANNUAL REPORT

REPAIR STATION SURVEILLANCE, STAFFING, TRAINING and INTERNATIONAL AGREEMENTS

Section 308 of the FAA Modernization and Reform Act of 2012 (Public Law 112-95) (the “Act”) requires the Federal Aviation Administration (FAA) to publish an annual report on FAA’s oversight of part 145 repair stations and implementation of the safety assessment system required under Title 49 United States Code §44733, subsection (a). This report describes the improvements in FAA’s ability to identify and track where part 121 air carrier repair work is performed and includes: a staffing model of FAA aviation safety inspectors (ASI); describes the training provided to FAA ASIs; and contains an assessment of the quality of surveillance performed by FAA ASIs and inspectors from countries in which the FAA has a bilateral agreement.

(1) Describe in detail any improvements in the Administration’s ability to identify and track where part 121 air carrier repair work is performed.

The FAA regulations authorize air carriers to make arrangements with other maintenance providers to perform its maintenance.¹ The air carrier remains primarily responsible for the airworthiness of its aircraft, whether the maintenance is contracted to another person or not. The FAA regulations require that maintenance performed by either an air carrier or by another person(s) such as a contract maintenance provider, must be performed in accordance with the air carrier’s required maintenance manual. In addition, the air carrier is required to document in its maintenance manual a listing of maintenance providers with whom it contracts maintenance and a general description of the work to be performed. However, we have noted deficiencies in that the air carriers’ maintenance manual often fails in providing the necessary instructions that enable maintenance providers to follow the air carriers’ maintenance program. The FAA has found that the required lists are not always kept up to date and/or in a standard format that is readily useful for FAA oversight and analysis purposes. This information is used by the FAA to plan surveillance of an air carrier’s maintenance program and determine that contract maintenance providers are performing their work according to the air carriers’ maintenance manual. Without accurate and complete information on the work being performed for air carriers, the FAA risk assessment tool cannot adequately target its inspection resources for surveillance.

To improve FAA’s oversight of air carrier’s contract maintenance, FAA published a notice of proposed rulemaking (NPRM)² in November 2012. The rule proposed that air carriers be required to develop policies, procedures, methods, and instructions for performing contract maintenance acceptable to the FAA and included in the air carriers’ maintenance manual. The rule proposed that air carriers maintain and provide to the FAA, in an acceptable format, a current list of their contract maintenance providers who perform aircraft maintenance work, including the contact maintenance provider’s name,

¹Unless otherwise indicated, when we refer to “maintenance,” the term is meant to include “maintenance, preventive maintenance, and alteration.”

² The NPRM was published in the Federal Register on November 13, 2012, docket number FAA-2011-1136, titled Air Carrier Contract Maintenance Provider.

physical address, and a description of the type of maintenance to be performed. Air carriers who make changes to this list would be required to provide a copy to the FAA by the last day of each calendar month. This information will reside in a single database to be used by the FAA for planning and targeting of surveillance activities of each air carrier's contract maintenance provider.

The intention of the proposed rule is to assure that the air carrier provides its contract maintenance provider with adequate guidance and instructions to perform maintenance tasks. It is intended to assist the FAA in its oversight responsibilities, especially in determining which maintenance providers are performing critical maintenance. It proposes a framework for the FAA to identify who performed the work for each air carrier and where, and what kind of work was done. The final rule is expected to be published in February 2015.

The FAA uses a risk-based surveillance approach to identify and target resources towards areas of greater concern or criticality. FAA inspectors use the risk management tools and processes to analyze the identified hazards and risk posed by those hazards. This method allows for targeted surveillance, rather than scheduled surveillance, which focuses on providing overall safety oversight for a growing aviation industry. The FAA began deployment of the next generation risk-based oversight system called Safety Assurance System (SAS) in July of 2014. FAA continues to make steady progress towards the deployment of SAS. Full deployment of SAS is expected by the end of fiscal year (FY) 2015.

(2) Include a staffing model to determine the best placement of inspectors and the number of inspectors needed.

The AVS Staffing Tool and Reporting System (ASTARS) model is used as a tool to assist management in the process of identifying staffing requirements for inspectors and engineers. The AFS ASTARS Model predicts the staffing requirement of non-supervisory ASIs residing in Field District Offices (FSDOs) and Certificate Management Offices (CMOs) at the national level. AVS made improvements within the AFS ASTARS Model this fiscal year. Moving forward, the multidisciplinary project team will focus on data quality as noted below. The project team continues to take steps to enhance the inputs, assumptions, and calculations used to deliver a defensible and transparent model that produces results used to determine staffing needs for ASIs.

In addition to model improvements, AVS continues to make strides towards improving data quality as it expands its use of Labor Distribution Reporting (LDR) data. The time measurements provided by LDR are important as this data is the agency source for the effort required to complete a work activity. As LDR data continues to improve, the ASTARS project team will align forecasting indicators to predict the work activity counts required by ASIs at the national, regional and field office levels. AVS currently projects forecast staffing levels will be available for field office inspectors by the FY 2016 and contained within the Workforce Plan. The existing model uses total recorded LDR hours divided by the total number of activities completed to determine an average time per

activity, also known as the “nominal time.” The number of activities expected to occur over the next ten years is then forecasted based upon a mathematically supported relationship to demand drivers, such as number of Passenger and Cargo Jets, which was determined through regression analysis.

(3) Describe the training provided to inspectors.

A newly hired airworthiness ASI is trained under two aviation specialties: Air Carrier Airworthiness (AC A/W) and General Aviation Airworthiness (GA A/W). Each has a specialized curriculum which utilizes a blended approach by providing prerequisite regulatory guidance as web-based training (WBT). This is then reinforced in the classroom training which utilizes hands on practical scenarios that reinforce the application of regulations in real life situations.

Once the formal training is completed, an AC A/W ASI will have completed 123 hours of WBT and 49 ½ days of classroom training while the GA A/W ASI will have received 104 hours of WBT and 46 ½ days of classroom training. This training includes material pertinent to part 145 repair stations as well as five days of classroom training dedicated solely to the part 145 repair stations.

Formal training occurs in six phases within the first year of employment. The WBT is held at the employee’s worksite and the classroom courses are completed at the FAA Mike Monroney Aeronautical Center Training Academy in Oklahoma City, OK.

Phase	AC A/W ASI	GA A/W ASI
Phase I	WBT – 26 Hours of regulatory content preparing the ASI for job functions expected to be accomplished in the first 180 days.	WBT – 26 Hours of regulatory content preparing the ASI for job functions expected to be accomplished in the first 180 days.
Phase II	Classroom – 24 days formalized practical application designed to reinforce the regulatory guidance and provide job function application to include safety management and international aviation.	Classroom – 19 days formalized practical application designed to reinforce the regulatory guidance and provide job function application to include safety management and international aviation.
Phase III	WBT – 38 hours of primarily AC specific job function training including maintenance/inspection programs and a variety of specialized functions.	WBT - 40 hours of primarily GA specific job function training including maintenance/inspection/programs and maintenance facilities/providers
Phase IV	Classroom - 14 days of hands-on practical application specific to assigned job functions to include maintenance organizations.	Classroom – 13 days of hands-on specific to job functions to include airworthiness technical core and a practical application workshop

Phase	AC A/W ASI	GA A/W ASI
Phase V	WBT – 59 hours of advanced AC specialized topics based on job function	WBT – 38 hours of advanced GA specialized topics based on job function
Phase VI	Classroom – 11 ½ days including 5 days of Certification and Surveillance of part 145 Repair Stations	Classroom – 14 ½ days including 5 days of Certification and Surveillance of part 145 Repair Stations
Total	123 Web based training hours 49 ½ Classroom days	104 Web based training hours 46 ½ Classroom days

On the job training (OJT) is an ongoing formalized program the Flight Standards Service uses to continually expand ASI proficiency in their specialty. OJT must be accomplished through 3 levels. In level 1 the employee must demonstrate the knowledge required for the task. In level 2 the employee must demonstrate an understanding of that knowledge, and in level 3 the employee must successfully perform the specific job task.

An airworthiness ASI who is assigned oversight of a part 145 repair station receives targeted OJT prior to accomplishing any associated job tasks. Proficiency must be successfully demonstrated in the following skills prior to any assignment of duty:

- Inspect a 14 CFR Part 145 Repair Station's Inspection Procedures Manual/Revision
- Inspect a 14 CFR Part 145 Foreign Repair Station
- Inspect a 14 CFR Part 145 Repair Station's Personnel Records
- Inspect a 14 CFR Part 145 Repair Station's Facilities and Equipment
- Evaluate a 14 CFR Part 145 Operator's SFAR 36 Authorization
- Evaluate a 14 CFR Part 145 Repair Station/Applicant's Facilities and Equipment
- Evaluate a 14 CFR Part 145 Repair Station/Applicant's Inspection Procedures Manual/Revision
- Certificate a 14 CFR Part 145 Foreign Repair Station
- Evaluate a 14 CFR Part 145 Repair Station and Quality Control Manual(s) Revision
- Certificate a 14 CFR Part 145 Repair Station/Satellite Located Outside the U.S. and its Territories

The successful completion of the formalized WBT, classroom courses, and OJT enable the ASI to be competent in the performance of assigned job functions. To maintain currency, the ASI is required to attend recurrent training every 5 years and advanced training as needed based on job assignment.

(4) Include an assessment of the quality of monitoring and surveillance by the Administration of work performed by its inspectors and the inspectors of foreign authorities operating under a maintenance safety or maintenance implementation agreement.

The FAA will inspect over 4,700 repair stations in 2015. There are over 4,000 domestic and 700 foreign FAA certificated repair stations. The numbers vary from year to year based on new repair station certifications and repair stations that go out of business, merge, move, or are acquired by other companies. Part of the repair station surveillance requirements are established from the FAA Order 1800.56O, National Work Program Guidelines. This order identifies specific work functions that FAA Flight Standards management team and inspectors must accomplish to provide a baseline of information and the appropriate assurances to assess the soundness of the aviation system. The guidance in this order assists FAA inspectors in planning their annual work program by prioritizing surveillance activities based on previous data analysis and inspector expertise with respect to certificate holder operations. This baseline is only the initial part of a comprehensive oversight program. Its purpose is to control the risk of undetected failure within critical systems, and ensure that possible latent risks caused by deficiencies do not remain undetected. Every FAA-certificated repair station, regardless of the location, is subject to certain calendar based risk inspections annually.

In addition to this baseline, inspectors must conduct a safety assessment using the Work Program Management Process or any other risk management process of a repair station. This safety assessment analyzes many factors, including the results of prior inspections and significant events. The FAA utilizes the Safety Performance Analysis System (SPAS) for safety assessment, surveillance planning, decision making, certification, and investigation, as appropriate. SPAS is a major tool for managing a risk-based work program and it is the foundation for a data-driven approach to safety. SPAS performance measures help the FAA identify trends and target resources. The FAA uses an automated repair station assessment tool for targeting areas of a repair station that present an elevated risk. This tool assists the inspector in prioritizing inspection efforts in areas that require focused attention. It also assists the inspector in future work program planning.

Whenever FAA risk analysis determines an increased level of risk and a corresponding decrease in the safety margin, the FAA increases its level and intensity of surveillance. For example, when an operator is under financial stress (such as bankruptcy) or experiences labor issues, the FAA will increase overall surveillance to ensure the maintenance and other safety related tasks are being properly done.

On average, inspectors may conduct as many as 16 inspection elements per year at a domestic repair station, or 15 inspection elements at a foreign repair station. The elements are based on the regulatory requirements of 14 CFR part 145 "Repair Stations". The comprehensive inspection requirements for a repair station are broken down into 16 possible elements, depending on various factors (primarily based on risk assessment), including, but not limited to, maintenance performed for a part 121 air carrier. Typically, an inspector will conduct surveillance activities for several of these elements on the same day. Larger and more complex repair stations, require the use of inspector resources on a more frequent basis, whereas, the smaller repair stations with fewer employees and less complex maintenance activities, generally don't consume the inspector resources the larger repair stations do.

An FAA inspector is not required to give notice prior to an inspection. However, an inspector may notify the repair station to ensure appropriate personnel are available and coordination is accomplished between the repair station and remote facilities or contractors subject to the inspection. In the case of repair stations located outside of the U.S., it's often necessary for the FAA to coordinate inspections with the approved maintenance organization (AMO) and its aviation authority.

FAA inspectors review paperwork and inspect the maintenance being performed on aircraft or component parts of aircraft within the repair stations ratings. Inspectors assigned to repair station surveillance ensure the facility has the proper manuals and paperwork of the air carriers it services, required equipment, and trained technicians to perform the job. Inspectors assigned to a certificated management office (CMO) for an air carrier whose aircraft is having maintenance performed at a repair station may also conduct inspections of that repair station.

Inspections resulting in less than satisfactory results may be handled using the risk management process. This tool is part of the inspector's available resources and used to identify and mitigate an identified risk. It affords the inspector the ability to target those inspection elements that do not meet the minimum regulatory standards and focus his or her resources on those areas to gain compliance. On occasion, a repair station may be in violation of the FAA Federal Aviation Regulations (FAR) or demonstrate a non-compliant attitude. In these instances an investigation ensues and if warranted, a repair station may be issued an administrative enforcement action, such as a warning notice or a letter of correction, be fined (civil penalty), have its certificate suspended for a predetermined number of days pending compliance with the FAR, or have its certificate revoked.

FAA-Certificated Repair Stations Located Outside the U.S.

In order to apply for FAA certification, a repair station located outside the U.S. must provide evidence that there is a need to provide maintenance for U.S. registered aircraft. The N-numbered aircraft may be used in general aviation or in large operations with U.S. air carriers. If the repair station applicant does not have a need to work on U.S. registered aircraft, then there is no reason for the FAA to invest resources for its certification or surveillance activities. The FAA calls this "demonstrating the need" for certification. In order to meet customer needs, many original equipment manufacturers have repair stations located outside the U.S.

Similar to repair stations located within the U.S., FAA-certificated repair stations located outside the U.S. are visited at least once a year by the repair station's principal inspector or assistant. Certificates for repair stations located outside the United States have a limited duration. Initial certification is limited to 12 months from the date the certificate is issued. Thereafter, the FAA will renew the certificate or rating for a 24 month period, if the repair station has operated per the applicable requirements of part 145 within the preceding period. The repair station must be inspected annually by the FAA or when

enduring a renewal of certification. FAA-certificated repair stations outside the U.S. must pay fees required under 14 CFR part 187.

The FAA may perform a follow-up inspection if risk indicators display a potential decrease in the safety margin. The risk management process detailed above, for the mitigation of identified risks, would be employed for systemic non-compliant elements.

Bilateral Agreements and the European Aviation Safety Agency (EASA)

For those repair stations in countries which the U.S. has a Bilateral Aviation Safety Agreement (BASA the Agreement), with Maintenance Implementation Procedures (commonly called BASA/MIP), the host aviation authority will audit the repair stations on behalf of the FAA. The FAA performs audits on behalf those countries that have repair stations located here in the U.S.

In June 2008, the Agreement was signed between the U.S. and the European Union (EU)* to cooperate in the regulation of civil aviation safety. The Agreement entered into force in May 2011, and provided 24 months to complete the transitions and transfers which were completed on May 3, 2013.

The Agreement allows the FAA and EASA to rely on each other's surveillance systems, minimize the duplication of efforts, increase efficiency, and conserve resources to the greatest extent possible. Annex 2 of the Agreement allows EASA and the FAA to accept each other's standards, systems, and approvals relating to repair stations located in the U.S. and EU-based AMOs that maintain civil aviation products. Annex 2 also explains how to establish points of communication and cooperation when urgent or unusual situations develop. The Agreement calls for successful completion of regularly scheduled FAA inspections. The FAA uses risk based concepts to target specific areas of elevated risk. The FAA and EASA have on-going discussions for harmonization of risk based oversight. The FAA and EASA must be satisfied that repair stations located in the U.S. and EU-based AMOs meet the conditions of Annex 2.

The Agreement covers 18 of the 27 European Union (EU) member countries. Before entering into the bilateral agreement, the U.S. evaluated the aviation systems of the each country and determined which ones were equivalent to the FAA. The 18 countries included in the agreement are:

1. Austria
2. Belgium
3. Czech Republic
4. Denmark
5. Finland
6. France

* The BASA with EASA was signed on June 30, 2008. The FAA delayed implementation of the agreement until FAA reauthorization was complete. In accordance with Article 19 of the agreement, the BASA and its annexes entered into force on the first day of the second month following the date on which the U.S. and the E.C. exchanged diplomatic notes confirming completion of their respective procedures for entry into force.

7. Germany
8. Italy
9. Luxemburg
10. Malta
11. Netherlands
12. Poland
13. Portugal
14. Romania
15. Spain
16. Sweden
17. Ireland
18. United Kingdom of Great Britain and Northern Ireland

The aviation authorities in those 18 countries inspect U.S. FAA certificated repair stations on behalf of the U.S. The FAA performs the same function here in the U.S. for EASA certificated repair stations. Inspections of FAA certificated repair stations located outside the U.S. are conducted using the EASA regulations and the FAA special conditions agreed upon with the U.S and contained within the Maintenance Annex Guide. The special conditions address areas where the FAA and EASA have not harmonized safety standards. For example, one special condition relates to air carrier maintenance manual requirements. The FAA requires an organizational management chart and more specific procedures while EASA does not.

To ensure both FAA and EASA are maintaining the quality of their inspections and reviewing the special conditions, FAA participates in sampling inspections. FAA inspectors participate as observers with the National Aviation Authority, and EASA's Sampling Inspection System (SIS) team to an EU-based approved maintenance organizations to ensure their compliance with the BASA MIP.

The FAA agreement with the EU provides benefits for repair stations located within the U.S. Approximately 1,300 of the 4,033 FAA-certificated repair stations located within the U.S. today hold an EASA certification as well. Thus, an FAA inspection on behalf of EASA saves the U.S.-based repair station additional inspection and certification fees.